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SAN JOSE, CA 95110-1083			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/757,399

Applicant(s)

HALLMARK ET AL.

Examiner

DENNIS TRUONG

Art Unit

2169

Period for Reply -- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-52, 63-88 and 92-95 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30-37 and 49-52 is/are allowed.
- 6) ☐ Claim(s) 27-29, 38, 42, 63-74, 78 and 85-88 is/are rejected.
- 7) ☐ Claim(s) 39-41, 43-48, 75-77, 79-84 and 92-95 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Action is responsive to Applicant's Amendments filed July 28, 2008.

Response to Amendment

2. It is acknowledged that claims 27, 29, 63-88, and 94-95 have been amended.
3. Claims 27-52, 63-88, 92-95 are pending.
4. In view of Applicant's amendment to claims 28 to recite "a hierarchy", the rejection to claim 29 under 35 USC 112 has been withdrawn.
5. In view of Applicant's amendment to claims 63-88 and 94-95 to recite "computer-readable storage medium", the rejection to claims 63-64, 65, 66-68, 69-70, 71-72, 73, 74-77, 78-84, 85-88, 94-95 under 35 USC 101 has been withdrawn.

Response to Arguments

6. Applicant's arguments with respect to claims 27, 38 and 42 have been fully considered but are not persuasive.
7. On page 24, Applicant argued that **Hongjun** does not teach the newly amended portions of claim 27, and states that "in Hongjun, the size of previously unassigned work partitions is never used as the basis for selecting work partitions to assign." Examiner respectfully submits that the amended portions states:

"wherein assigning the work partitions in a sequence includes assigning a first previously unassigned work partition to a particular entity of the plurality of entities, and when the particular entity completes processing the first work partition, picking a second previously unassigned work partition based at least in part to the size of the second work

partition, and assigning the second unassigned work partition to the particular entity for processing.”

In sec. 2.2 Hongjun states, "if there are tasks available in the system, the processor will be assigned the next task for execution" by stating **next task**, Hongjun inherently teaches that a previous task has been assigned and completed and therefore teaches: assigning a first previously unassigned work partition to a particular entity of the plurality of entities, and when the particular entity completes processing the first work partition, claimed. Furthermore in sec. 3.3.2 Hongjun states, "amount of data to be transferred is determined in such a way that two processors sharing the load are expected to complete their tasks at the same time...We would like to transfer enough pages of T1 such that a hash table can be built in memory for these pages...We can determine the number of pages to be transmitted that will optimize the load-balancing..." which shows that the amount of data is being considered when choosing the next task to be executed to assure that the processor complete the task at the same time.

8. On page 27, Applicant argued that Hongjun does not indicate that a "user-specified degree of parallelism" is used or determined, as disclosed in claim 38. Examiner respectfully submits that in the Introduction, Hongjun states, "tasks are assigned to processors according to some criteria such as the tuple size of data associated to tasks," the criteria disclosed should be understood as the "user-specified degree of parallelism" where the steps and criteria implemented to provide load-balancing disclosed in sec 3.3 so that the processors are optimally used based on the evaluations is the "user-specified degree of parallelism" claimed.

9. On page 27-28, Applicant argued that Hongjun never discloses anything analogous to "hints", as disclosed in claim 42. Examiner respectfully submits that in (sec. 3.3.1 and 3.3.2)

Hongjun, discloses calculations for estimated finish time based on a task and its properties and using the estimation to determine how to distribute the task to idled processors, where the Examiner has interpreted determining the finishing time and also determining how to distributed the task to idled processors depending on the estimated finishing time as "hints" and in determining the finishing time Hongjun queries for the necessary information need for the calculations disclosed in (sec. 3.3.1 and 3.3.2).

It is also noted that the features upon which applicant relies (i.e., "an SQL statement can specify the degree of parallelism to be used for the execution of constituent parts of SQL statements".) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Allowable Subject Matter

10. Claim 29 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
11. Claim 65, 66-68, 69-70, 71-72, 73, 85-88 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 101 set forth in this Office action.
12. Claims 30-32, 33-34, 35-36, 37, 49-52 are allowed.
13. Claims 39-41, 43-48, 75-77, 79-84, 92-93, 94-95 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 27-28, 38, 42, 63-64, 74, 78 are rejected under 35 U.S.C. 102(b) as being anticipated by **Hongjun Lu and Kian-Lee Tan (“Dynamic and Load-balanced Task-Oriented Database Query Processing in Parallel Systems”)** (herein referenced as **Hongjun**).

As per claim 27, Hongjun discloses:

- **dividing the operation into a set of work partitions**, as (sec. 2.1) where a query is decomposed into an optimal amount of tasks, where the query is the operation and the tasks are work partitions.
- **assigning work partitions from said set of work partitions to a plurality of entities, wherein at least one entity of said plurality of entities is assigned a plurality of work partitions from said set of work partitions**, as (sec. 2.2, 3.2) where processors which are claimed plurality of entities acquire tasks from system task pool where the task pool is the claimed set of work partitions. Further more (sec 2.3 and 3.3) discloses task stealing to optimize the load of the processors and the time of completion by allowing an idle processor to "steal" a task from another processor where "task stealing" is also part of assigning work partitions.
- **wherein the step of assigning work partitions is performed by assigning the work partitions in a sequence based at least in part on sizes associated with the work**

partitions, as (sec 2.2) discloses "the size of the task is the number of pages of data associated with the task and the size the result generated is zero" as each task is completed the global information is updated and each time the processor finishes a task the processor check for more tasks to acquire base on the global information. Further more (sec 2.3 and 3.3) discloses task stealing which involves determining "the amount of unfinished work to be performed" and being measured by "estimated time needed to finish up the task" which in part is dependent on the size of the task.

- **and said plurality of entities operating in parallel on work partitions assigned to them to perform said operation**, it should be understood that the processor disclosed above by **Hongjun** are operating in parallel (Abstract).
- wherein assigning the work partitions in a sequence includes assigning a first previously unassigned work partition to a particular entity of the plurality of entities, and when the particular entity completes processing the first work partition, as (sec. 2.2) "if there are tasks available in the system, the processor will be assigned the next task for execution" by stating next task, Hongjun inherently teaches that a previous task has been assigned and completed.
- **picking a second previously unassigned work partition based at least in part to the size of the second work partition, and assigning the second unassigned work partition to the particular entity for processing**, as (3.3.2) "amount of data to be transferred is determined in such a way that two processors sharing the load are expected to complete their tasks at the same time...We would like to transfer enough pages of T1 such that a hash table can be built in memory for these pages...We can determine the

number of pages to be transmitted that will optimize the load-balancing..." which shows that the amount of data is being considered when choosing the next task to be executed to assure that the processor complete the task at the same time.

As per Claim 28, Claim 27 is incorporated and further Hongjun discloses:

- **wherein the step of assigning the work partitions in a sequence is performed by assigning relatively larger work partitions before assigning relatively smaller work partitions** (sec. 2.3) discloses task stealing "idle processors may help to bear the burden of overloaded processors to minimize the completion time...the idle processor determines the donor (the overloaded processor) and the amount of load to be transferred" through the disclosed process it should be understood that the larger work partitions are being worked on by the "overloaded processor" which is why it is overloaded and the smaller work load is "stolen" by an idling processor. This "load balancing" process is known in the art to be used to evenly distribute the workload as disclose in the claim.

Claim 38 is method claim for processing a query corresponding to the method claim 27 and is rejected under the same reason set forth in connection to rejections of claim 27 respectively above. Where **Hongjun** further teaches: **determining a user-specified degree of parallelism to use in performing the operation**, as (sec.3.4) which discloses performance evaluation of the algorithm disclosed and 3 other algorithms for parallel processing of queries. This shows the ability to choose among each algorithm and each algorithm provide a different level of parallelism.

Claim 42 is method claim for processing a query corresponding to the method claim 27 and is rejected under the same reason set forth in connection to rejections of claim 27 respectively

above. Where **Hongjun** teaches "tasks" as claimed **query fragments** and further teaches: **incorporating hints into at least some of said query fragments, wherein the hint associated with a given query fragment indicates how to perform the work partition associated with said given fragment**, as (sec. 3.3.1 and 3.3.2) discloses calculations for estimated finish time based on a task and its properties and using the estimation to determine how to distribute the task to idled processors.

Claim 63 and 64 are a computer-readable medium claims corresponding to the method claims 27 and 28 respectively and are rejected under the same reason set forth in connection to rejections of claims 27 and 28 respectively above. Where **Hongjun** further teaches **a computer-readable medium** as (sec. 2) "shared disk" is the multiprocessor system.

Claim 74 is a computer-readable medium corresponding to the method claim 38 and is rejected under the same reason set forth in connection to rejections of claim 38 respectively above. Where **Hongjun** further teaches **a computer-readable medium** as (sec. 2) "shared disk" is the multiprocessor system.

Claim 78 is a computer-readable medium corresponding to the method claim 42 and is rejected under the same reason set forth in connection to rejections of claim 42 respectively above. Where **Hongjun** further teaches **a computer-readable medium** as (sec. 2) "shared disk" is the multiprocessor system.

Conclusion

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS TRUONG whose telephone number is (571)270-3157. The examiner can normally be reached on MON - FRI: 7:30 - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MOHAMMAD Ali can be reached on (571) 272-4105. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2169

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